

XLII. *Notes on the Parasites of the Genus Nomada and on other Insects.* By Mr. F. SMITH.

[Read 4 April, 1842.]

ON the 18th of June, 1839, I discovered a colony of *Eucera longicornis*, and having learned from Mr. Shuckard that the "*Nomada Schüfferella*" was parasitic upon it, I watched the spot some hours, and at that time succeeded in taking only two specimens; I therefore concluded I was too late in the season for them, finding the majority of the *Eucerae* were torn in the wings and their colours faded to light grey.

1840, June 2nd. I again visited the spot and found both *Eucera* and its parasite abundant; even then I was rather late for the males of the *Nomada*. I took but three specimens of the latter, the male of which is the "*Nomada connexa*," Kirby. I observed the *Nomada* entering the burrows of the *Eucera*, and sometimes even jostling which should enter first; the *Nomada* generally conquered, and then the bee would fly off. They appear to live in perfect harmony together; but if the parasite enters a burrow, and the bee arrives before it has quitted the nest, she appears to discover its presence immediately, and the moment she inserts her head into the entrance, she stops short, and quickly retreating flies off. Being now satisfied of the connection existing between the bee and its parasite, I became anxious to attempt breeding them under my own personal observation, and for that purpose, in August 1840, I dug up several nests, which are formed thus:—the female burrows a cylindrical hole to the depth of about six or seven inches, in a stiffish clay, and then forms a chamber that would about contain the cocoon of the silk worm; and having (as appears from the polished surface) smoothed and coated the cell with gluten she deposits at the bottom, to the extent of about one-fourth, a dark coloured mixture, probably pollen and honey; then she stores about two-fourths of the remaining space with a bright yellow pollen, and the remaining fourth with a substance nearly white: this I found to be the case in four nests which I dug up in June 1840. I was unsuccessful in my attempt to breed the insects; they all perished, I presume, for want of a sufficient degree of moisture, as I did not place the nests in a sufficient quantity of mould, nor keep them moist, as in their natural position.

1841, March 15th. I visited the spot, and after an hour's labour succeeded in digging out several cocoons containing bees or parasites. I took a quantity home, and on opening the cells I

was delighted to see two specimens of the *Nomada* fully developed and active in two of the cells. The bees which I have examined are in different states of development.

These observations are, I regret to say, far from complete, and it will be for future observation to clear up several points in the economy of these insects. I should observe, that the cells containing the *Nomadæ* had a mere filmy coating or cocoon, closely resembling goldbeater's skin, in which the insect was found. I should, therefore, suppose the parasite to be either hatched sooner than the bee and to devour the provision previous to the development of the latter, or that the parasite removes the egg of the bee and deposits her own in its place; or, it may be, that the bee having deposited a quantity of food previous to laying her egg, the parasite deposits hers, and the bee then discontinues her labours in that nest and commences another; for when the size of the two insects is considered, the food required by the bee would be, I should conclude, considerably more than what would be required by the parasite. These theories I hope in time to clear up; in the mean time I lay before the Society such information as I am possessed of, and there being so much to unravel, I hope those gentlemen who have more time to look after these things than myself will be induced to attempt the solution of the difficulty. I, for my own part, shall not be idle.

In April 1841 I found some specimens of the supposed larvæ of "*Meloe proscarabæus*" in profusion, in the flowers of a wild plant; as many as twenty in some flowers. I might have collected thousands. This was in Bishop's Wood, Hampstead. My reason for exhibiting them is, that in June of the same year I found a similar insect or larvæ attached to the underside of the abdomen of *Nomada Schifferella*. They are evidently distinct species, different in form and colour, one being black, the other yellow.

Having stated at a previous meeting of the Society that I had bred the same species of parasite from several distinct species, and even genera of insects, I now exhibit five specimens of a species of *Cryptus*, three bred from the cocoons of *Epipone levipes*, the other two from the cocoon of *Trichiosoma lucorum*; they are all females, and on the closest examination I believe them to be the same species.